

Serial No. 10/500,858
Preliminary Amendment

IN THE CLAIMS

Please amend the claims as follows:

1 (Currently Amended): A nonlinear resistor circuit using a floating gate MOSFETs, wherein a Λ -shaped nonlinear resistor circuit using a multi-input floating gate MOSFET and a V-shaped nonlinear resistor circuit using a multi-input floating gate MOSFET are connected in parallel therewith and current of said Λ -shaped nonlinear resistor circuit and current of said V-shaped nonlinear resistor circuit are added, thus to combine various N-shaped voltage-current characteristics, said N-shaped voltage-current characteristic is continuously changed, and the voltage-current characteristics approximate to piecewise linear characteristics of third to seventh orders are realized.

2 (Canceled).

3 (Canceled).

4 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein negative resistor portions in the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are linear as much as possible, and both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are moved in parallel in the left and right directions by a voltage between an input terminal of said Λ -shaped nonlinear resistor circuit and a drain terminal of an N-channel MOSFET and a voltage between an input terminal of said V-shaped nonlinear resistor circuit and a drain terminal of a P-channel MOSFET, thus to combine the characteristic of the third order.

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5 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein negative resistor portions in the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are linear as much as possible, and both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are moved in parallel in the left and right directions by a voltage between the ground and a drain terminal of a floating gate P-channel MOSFET of said Λ -shaped nonlinear resistor circuit and a voltage between the ground and a drain terminal of a floating gate N-channel MOSFET of said V-shaped nonlinear resistor circuit, thus to combine the characteristic of the third order.

6 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein an inclination of a negative portion of the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit or the voltage-current characteristic of said V-shaped nonlinear resistor circuit is adjusted to change the inclination of the characteristic, and the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit or the voltage-current characteristic of said V-shaped nonlinear resistor circuit is moved in parallel in the left and right directions by a voltage between an input terminal of said Λ -shaped nonlinear resistor circuit and a drain terminal of an N-channel MOSFET and a voltage between an input terminal of said V-shaped nonlinear resistor circuit and a drain terminal of a P-channel MOSFET, thus to combine the fourth order characteristic.

7 (Currently Amended): The nonlinear resistor circuit using the floating gate

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MOSFETs according to Claim [[3]] 1, wherein an inclination of a negative portion of the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit or the voltage-current characteristic of said V-shaped nonlinear resistor circuit is adjusted to change the inclination of the characteristic, and the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit or the voltage-current characteristic of said V-shaped nonlinear resistor circuit is moved in parallel in the left and right directions by a voltage between the ground and a drain terminal of a floating gate P-channel MOSFET of said Λ -shaped nonlinear resistor circuit and a voltage between the ground and a drain terminal of a floating gate N-channel MOSFET of said V-shaped nonlinear resistor circuit, thus to combine the fourth order characteristic.

8 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein inclinations of negative portions of both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are adjusted to change the inclinations of the characteristics, and both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are moved in parallel in the left and right directions by a voltage between an input terminal of said Λ -shaped nonlinear resistor circuit and a drain terminal of an N-channel MOSFET and a voltage between an input terminal of said V-shaped nonlinear resistor circuit and a drain terminal of a P-channel MOSFET, thus to combine the fifth order characteristic.

9 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein inclinations of negative portions of both the

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voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are adjusted to change the inclinations of the characteristics, and both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are moved in parallel in the left and right directions by a voltage between the ground and a drain terminal of a floating gate P-channel MOSFET of said Λ -shaped nonlinear resistor circuit and a voltage between the ground and a drain terminal of a floating gate N-channel MOSFET of said V-shaped nonlinear resistor circuit, thus to combine the fifth order characteristic.

10 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein an inclination of a negative portion of the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit or the voltage-current characteristic of said V-shaped nonlinear resistor circuit is adjusted to change the inclination of the characteristic, and both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are moved in parallel in the lateral axis direction by a voltage between an input terminal of said Λ -shaped nonlinear resistor circuit and a drain terminal of an N-channel MOSFET and a voltage between an input terminal of said V-shaped nonlinear resistor circuit and a drain terminal of a P-channel MOSFET, thus to combine the sixth order characteristic.

11 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein an inclination of a negative portion of the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit or the voltage-current characteristic of said V-shaped nonlinear resistor circuit is adjusted to change the

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inclination of the characteristic, and both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are moved in parallel in the lateral axis direction by a voltage between the ground and a drain terminal of a floating gate P-channel MOSFET of said Λ -shaped nonlinear resistor circuit and a voltage between the ground and a drain terminal of a floating gate N-channel MOSFET of said V-shaped nonlinear resistor circuit, thus to combine the sixth order characteristic.

12 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein inclinations of negative portions of both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are adjusted to change the inclinations of the characteristics, and both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are moved in parallel in the lateral axis direction by a voltage between an input terminal of said Λ -shaped nonlinear resistor circuit and a drain terminal of an N-channel MOSFET and a voltage between an input terminal of said V-shaped nonlinear resistor circuit and a drain terminal of a P-channel MOSFET, thus to combine the seventh order characteristic.

13 (Currently Amended): The nonlinear resistor circuit using the floating gate MOSFETs according to Claim [[3]] 1, wherein inclinations of negative portions of both the voltage-current characteristic of said Λ -shaped nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are adjusted to change the inclinations of the characteristics, and both the voltage-current characteristic of said Λ -shaped

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nonlinear resistor circuit and the voltage-current characteristic of said V-shaped nonlinear resistor circuit are moved in parallel in the lateral axis direction by a voltage between the ground and a drain terminal of a floating gate P-channel MOSFET of said Λ -shaped nonlinear resistor circuit and a voltage between the ground and a drain terminal of a floating gate N-channel MOSFET of said V-shaped nonlinear resistor circuit, thus to combine the seventh order characteristic.